Base Case Modeling Assumptions for 2011-2012 NYCA IRM Requirement Study

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
Peak Load	33,025 MW for NYCA, 11,725 MW for zone J, and 5368 MW for zone K.	To be provided by NYISO on October 1, 2010.	Forecast based on examination of 2010 weather normalized peaks. Top three external Area peak days aligned with NYCA. The interim modeling uses the Gold Book Forecast of 33,160 MW for NYCA, 11,775 MW for NYC and 5,384 MW for LI.	Impact will be known once the IRM forecast is issued on Oct 1.
Load Shape Model	2002 Load Shape	2002 Load Shape	After evaluating 2009 data, analysis indicates 2002 load shape is an appropriate representation for this analysis.	None
Wind Generation Profile	2002 Wind Generation Profile	2002 Wind Generation Profile	Hourly wind readings correlate with hourly loads. Sensitivity using 2006 wind readings as basis.	None
Load Uncertainty Model	Statewide and zonal model updated to reflect current data.	Statewide and zonal model updated to reflect current data.	Method used and accepted by NYISO and ICS based on collected data and input from LIPA, Con Ed, and NYISO *(see Attachment A)*.	Low (+)
Existing Generating Unit Capacities	Updated DMNC test values	Updated DMNC test values. Use the minimum of DMNC or CRIS values.	2010 Gold Book units	Low (-)

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
Proposed New Units	Those listed on *Attachments B and B1*.	Those listed on *Attachment B.*	Units built since the 2010 Gold Book and those non-renewable units with Interconnection agreements signed by August 1st. Renewables based on RPS agreements and ICS input.	Low (-)
Wind Resource Production Modeling	(1,326 MW) Derived from hourly wind data with average Summer Peak Hour availability factor of approximately 11%.	(1,260 MW) Derived from hourly wind data with average Summer Peak Hour availability factor of approximately 11%. *See Attachment B-1*.	Based on collected hourly wind data. Summer Peak Hour capacity factor based on June 1-Aug 31, hours (beginning) 2-5 PM.	Low (-)
Solar Resource Modeling	Hourly solar readings converted to MW output with average Summer Peak Hour availability factor of approximately 65%. (30 MW)	Forecast of 15 MW of total solar capacity, centered on Long Island. *See Attachment B-2.*	Based on collected hourly solar data. Summer Peak Hour capacity factor based on June 1-Aug 31, hours (beginning) 2-5 PM.	None
Retirements	Poletti 1 retirement (891 MW 2/10), Greenidge Unit 3 (52 MW 12/09), and Westover Unit 7 (40.2 MW 12/09).	Energy Systems North East (ESNE) retirement of 74.5 MW from zone A	2010 Gold Book plus units indicated by PSC notification.	None
Forced & Partial Outage Rates	5-year (2004-08) GADS data. (Those units with less than five years data could use available representative data.)	5-year (2005-09) GADS data. (Those units with less than five years data could use available representative data.) Adjustment made to true-up the EFORs to EFORds.	Most recent 5-year period. *(see Attachments C and C-1)* Includes proxy data for unit(s) that are deemed suspect as part of the GADS screening process.	Low (-)

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
Planned Outages	Based on schedules received by NYISO & adjusted for history.	Based on schedules received by NYISO & adjusted for history.	Updated schedules.	None
Summer Maintenance	Modeled 150 MW after reviewing last year's data.	Use 150 MW after reviewing last year's data.	Review of most recent data.	None
Combustion Turbines Ambient Derate	Derate based on provided temperature correction curves.	Derate based on provided temperature correction curves. Add derates for new units.	Operational history indicates derates in line with manufacturer's curves.	Low (+)
Environmental Impacts	No impact on unit availability due to RGGI . The base case assumes that any forthcoming NOx RACT rule will not require compliance by summer 2010 .	No impact on unit availability due to RGGI . The base case assumes that any forthcoming NOx RACT rule will not require compliance by summer 2011.	A future year sensitivity may be run.	None
Non-NYPA Hydro Capacity Modeling	45% derating.	45% derating.	Review of historic and most recent data. *See Attachment G*	None
Special Case Resources	2575 MW (July 10) based on 3 year historical growth rate. Monthly variation based on historical experience. Limit to 4 calls per month in July and August for proposed DEC limited generation. (about 30 hour total).	2498 MW (Aug 11) based on NYISO growth rate forecast. Monthly variation based on historical experience.	Those sold for the program, discounted to historic availability. and distributed according to zonal performance. Methodology for growth rate forecast has improved. *See SCR determinations in Attachment F.*	Low (-)

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
EDRP Resources	329 MW registered; modeled as 148 MW in July and Aug and proportional to monthly peak load in other months. Limit to 5 calls per month.	260 MW registered; modeled as 172 MW in July and Aug and proportional to monthly peak load in other months. Limit to 5 calls per month.	Those registered for the program, discounted to historic availability. (66% overall[1]) August values calculated from 2010 August registrations.	Low (-)
External Capacity - Purchases	Grandfathered amounts of 50 MW from NE, 1080 MW from PJM and 1090 MW from Quebec. Equivalent[2] Contracts modeled.	Grandfathered amounts of 50 MW from NE, 37 MW from PJM, and 1,090 MW from Quebec modeled as actual contracts on border interfaces. Also, 1,043 MW modeled as de-ration on the upstate ties to PJM.	Grandfathered contracts per FERC. De-ration to account for ETCNL.	None
Capacity - Sales	In addition to the long term firm sales of 303 MW, include known firm contracts of 641 MW from NE FCM market. Equivalent Contracts modeled.	In addition to the long term firm sales of 303 MW(nominal value), include known firm contracts of 716 MW as a result of NE FCM market auctions. Contracts modeled on border interfaces.	Other firm contracts are becoming known, such as from neighbor's forward capacity markets.	Low (+)
Capacity Wheels-through	None modeled. Sensitivity Modeled	None modeled. A sensitivity case may be run.	The ISO tariff is silent about capacity wheels through NYCA.	None
EOPs (other than SCR and EDRP)	700 MW of non-SCR/EDRP MWs.	737 MW of non-SCR/EDRP MWs.	Based on TO information, measured data, and NYISO forecasts. *See Attachment D.*	Low (-)

[1] The 66% value is from the January 16th, 2007 NYISO filing to FERC.

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
Interface Limits	Based on 2009 Operating Study, 2009 Operations Engineering Voltage Studies, 2009 Comprehensive Planning Process, and additional analysis.	Based on 2010 Operating Study, 2010 Operations Engineering Voltage Studies, 2010 Comprehensive Planning Process, and additional analyses including interregional planning initiatives. Operation of M29 Line (improvement in transfer from zone I to zone J by 350MW).	NYISO engineering studies and additional analysis and input from other external Control Areas. Power factor improvement initiatives and lower forecast loads have resulted in higher transfer capability on the Dysinger East, West Central, and Volney East interfaces. *See Attachments E, E-1, and E-2.*	Low (-)
New Transmission Capability	Linden VFT - 300 MW.	Upgrade on Northport Norwalk Cable (NNC) line to 428 MW from 286 MW.	Based on TO provided models and NYISO review. NNC rating is per preliminary TO study. Confirmation to occur before final base case.	Low (-)
Transmission Cable Forced Outage Rate	All existing Cable EFORs updated on LI and NYC to reflect 5 year history.	All existing Cable EFORs updated on LI and NYC to reflect 5 year history.	Based on TO analysis.	Low(+)
Unforced Capacity Deliverability Rights (UDR)	UDRs have been issued for the Cross Sound Cable, Neptune cable, and Linden VFT Project.	No new projected UDRs	Contracted amounts of capacity are confidential and are included as capacity internal to NYCA.	None
Model Version	Version 2.98	Version 3.01	Per testing and recommendation by ICS.	None

Parameter	2010 Study Modeling Assumptions	Recommended 2011 Study Modeling Assumptions	Basis for Recommended 2011 Assumptions	Possible Impact on IRM
Outside World Area Models	Single Area representations for Ontario and Quebec. Three zones modeled for PJM. Five zones modeled for New England derived from 13 zones provided.	Single Area representations for Ontario and Quebec. Four zones modeled for PJM. Thirteen zones modeled for New England.	The load and capacity data is provided by the neighboring Areas. This updated data may then be adjusted as described in Policy 5.	Low (-)
Reserve Sharing between Areas	All Control Areas have indicated that they will share reserves equally among all.	All Control Areas have indicated that they will share reserves equally among all.	Per NPCC CP-8 working group assumption.	None

Range: Low < 0.5%, Medium 0.5% - 1%, High > 1%

Attachment A
NYCA Load Forecast Uncertainty

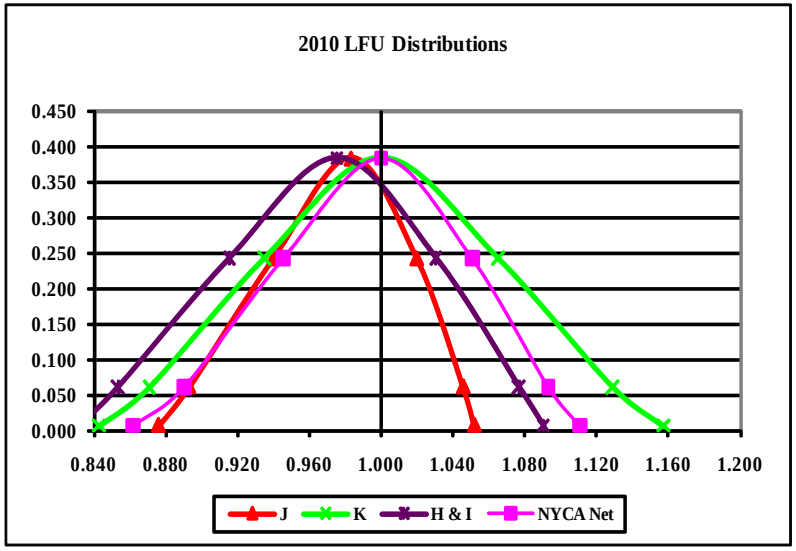
2009 and 2010 LFU Models

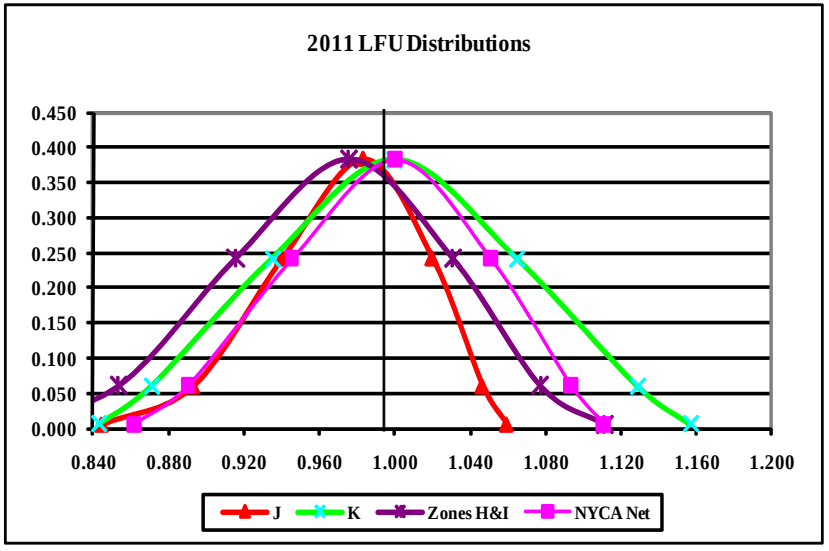
2010 Load Forecast Uncertainty Models

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net
0.0062	1.0903	1.0522	1.1570	1.1105
0.0606	1.0768	1.0460	1.1290	1.0932
0.2417	1.0305	1.0200	1.0650	1.0506
0.3830	0.9755	0.9833	1.0000	1.0000
0.2417	0.9154	0.9400	0.9350	0.9453
0.0606	0.8533	0.8928	0.8710	0.8901
0.0062	0.8317	0.8758	0.8430	0.8619

2011 Load Forecast Uncertainty Models

Multiplier	Zones H&I	Con Ed (J)	LIPA (K)	NYCA Net
0.0062	1.1111	1.0594	1.1570	1.1105
0.0606	1.0771	1.0464	1.1290	1.0932
0.2417	1.0306	1.0198	1.0650	1.0506
0.3830	0.9755	0.9832	1.0000	1.0000
0.2417	0.9154	0.9399	0.9350	0.9453
0.0606	0.8533	0.8927	0.8710	0.8901
0.0062	0.7921	0.8441	0.8430	0.8619





Attachment B
List[3] of Proposed Units
To be in-service by summer of 2011

Project Name	IS Date	Zone	MW
Empire Generating	7/10	F	635
Riverbay	6/10	J	24
Fulton County Land Fill	5/10	F	3.2
Astoria Energy II	5/11	J	550
Uprate Gilboa #4	6/10	F	30
Total			1,242.2

[3] The list on this page does not show wind and solar units which are presented on Attachments B-1, and B-2, respectively.

Attachment B1

Renewable Generating Projects (Wind) for Inclusion in the 2011-2012 Installed Reserve Margin Study

Considered for Inclusion in the 2011-2012 IRM Study

Facility Name	Owner / Developer	Zone	Connecting Transmission Owner	NYISO Interconnection Study Queue Project Number	Projected/ Actual In-Service Date	Current Status	Modeled in 2010 IRM	Existing Wind Capacity (MW)	New Wind Capacity for 2011 IRM (MW)	Total Wind Capacity for 2011 IRM (MW)
Steel Winds II	First Wind	A	National Grid	234	2010 Nov		45.0	0.0	15/0[1]	0.0
Bliss Windpark	Noble Bliss Windpark, LLC	A	Village of Arcade	173	2008 May	Operating	100.5	100.5		100.5
Steel Wind	Constellation Power	A			2007 Jan	Operating	20.0	20.0		20.0
High Sheldon Wind Farm	Sheldon Energy, LLC.	C	NYSEG	144	2009 Feb	Operating	112.5	112.5		112.5
Canandaigua I[2]	Canandaigua Power Partners, LLC	C	NYSEG	135	2008 Jun	Operating	82.5	82.5		82.5
Canandaigua II[2]	Canandaigua Power Partners, LLC	C	NYSEG	199	2008 Jun	Operating	42.5	42.5		42.5
Wethersfield Wind Power	Noble Wethersfield Windpark, LLC	C	NYSEG	177	2008 Dec	Operating	126.0	126.0		126.0
Bear Creek	Wind Park Bear Creek, LLC	C			2006 Feb	Operating	22.0	22.0		22.0
Altona Windpark	Noble Altona Windpark, LLC	D	NYPA	174	2008 Sept	Operating	99.0	97.5		97.5
Chateaugay Windpark I	Noble Chateaugay Windpark, LLC	D	NYPA	214	2008 Sept	Operating	106.5	106.5		106.5
Belmont/Ellenburg II	Noble Environmental Power LLC	D	NYPA	213	2011 Oct		21.0	0.0		0.0
Clinton Windpark I & II	Noble Clinton Windpark, LLC	D	NYPA	172 & 211	2008 May	Operating	100.5	100.5		100.5
Ellenburg Windpark	Noble Ellenburg Windpark, LLC	D	NYPA	175	2008 May	Operating	81.0	81.0		81.0
Maple Ridge 1 & 2	Flat Rock Wind Power, LLC	E	National Grid	171	2006 Feb	Operating	321.0	321.7		321.7
Madison	Horizon Wind	E	NYSEG		2000 Sept	Operating	11.6	11.5		11.5
Munnsville	Coral Power	E	NYSEG		2007 Aug	Operating	34.5	34.5		34.5
Fairfield Wind Project[3]	PPM Energy	C	NYSEG	156	2011 Sept					
Marble River Wind Farm	Horizon Wind Energy	D	NYPA	161 & 171	2011 Oct					
TOTAL CAPACITY - ALL CATEGORIES							**1,326.1**	**1,259.2**	**0.0**	**1,259.2**

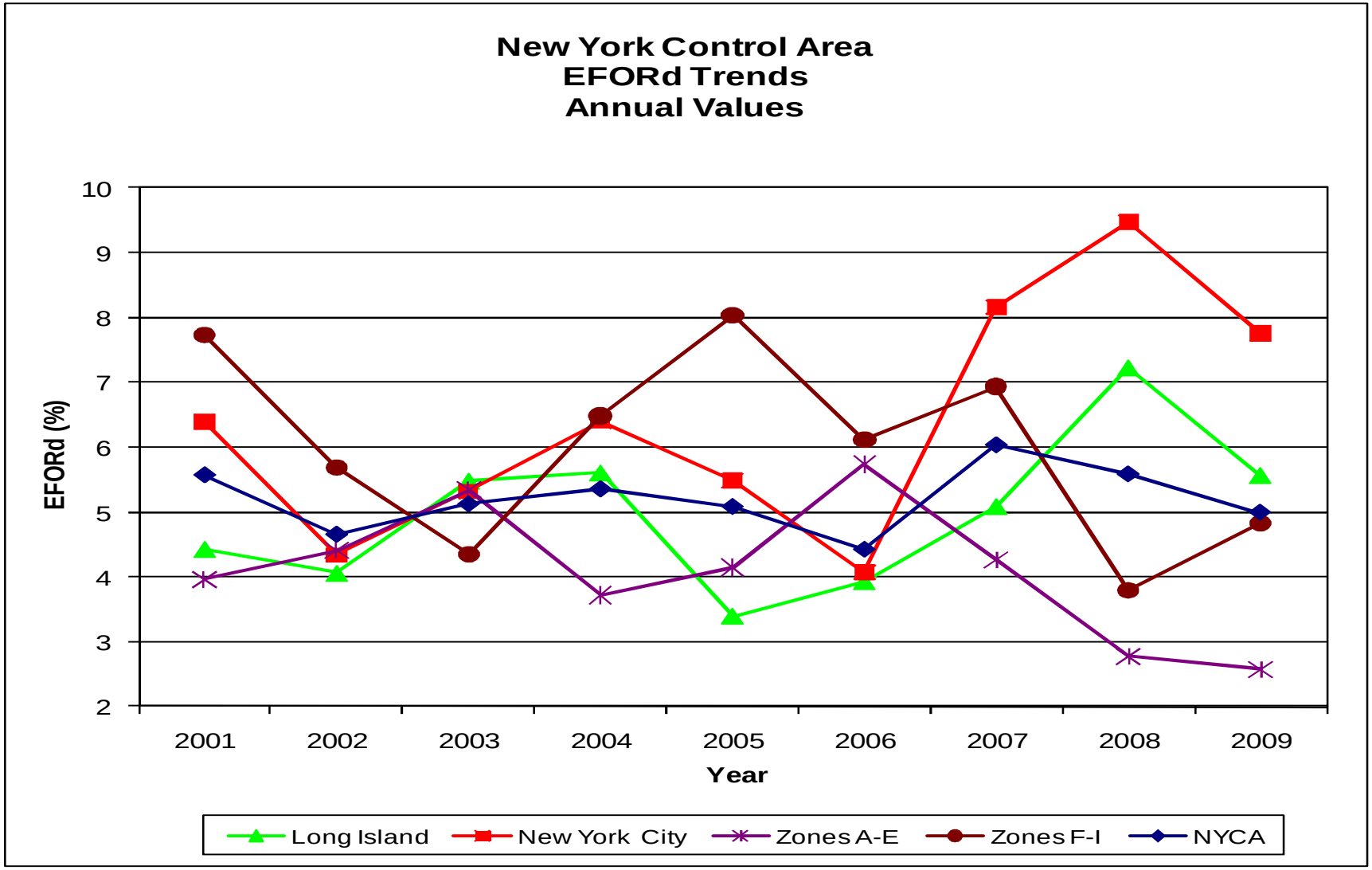
Notes:

1. The CRIS value for this unit is zero MW, therefore, the capacity does not count in the IRM study.
2. Canandaigua I sometimes referred to as Cohocton Wind Farm. Canandaigua II sometimes referred to as Dutch Hill Wind Farm.
3. Fairfield Wind was previously called Hardscrabble Wind.

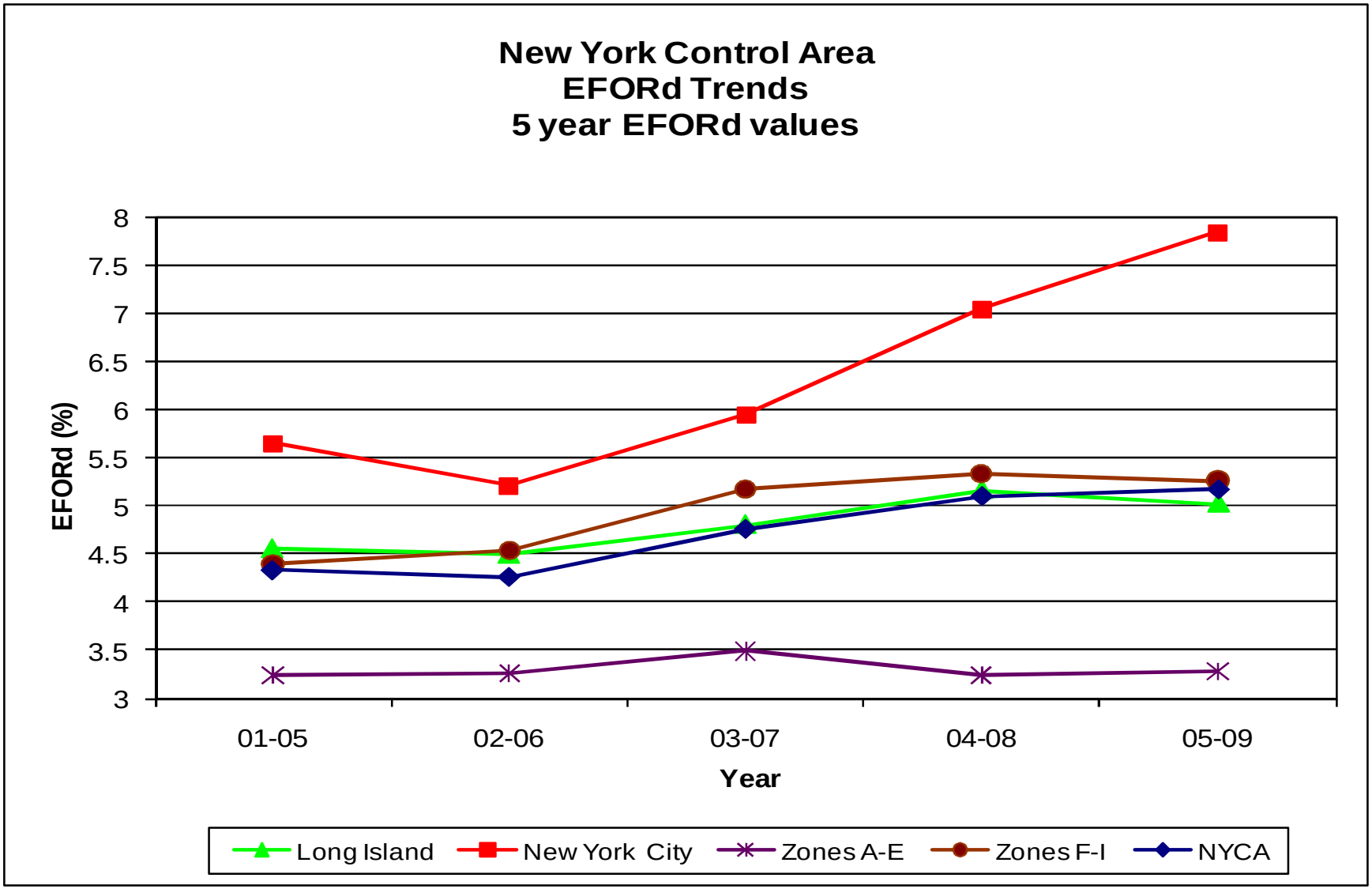
Attachment B-2
List of Solar proposed Units
To be in-service by summer of 2011

Project Name	IS Date	Zone	MW
EnXco Solar	5/11	K	15.0
Total			15.0

Attachment C

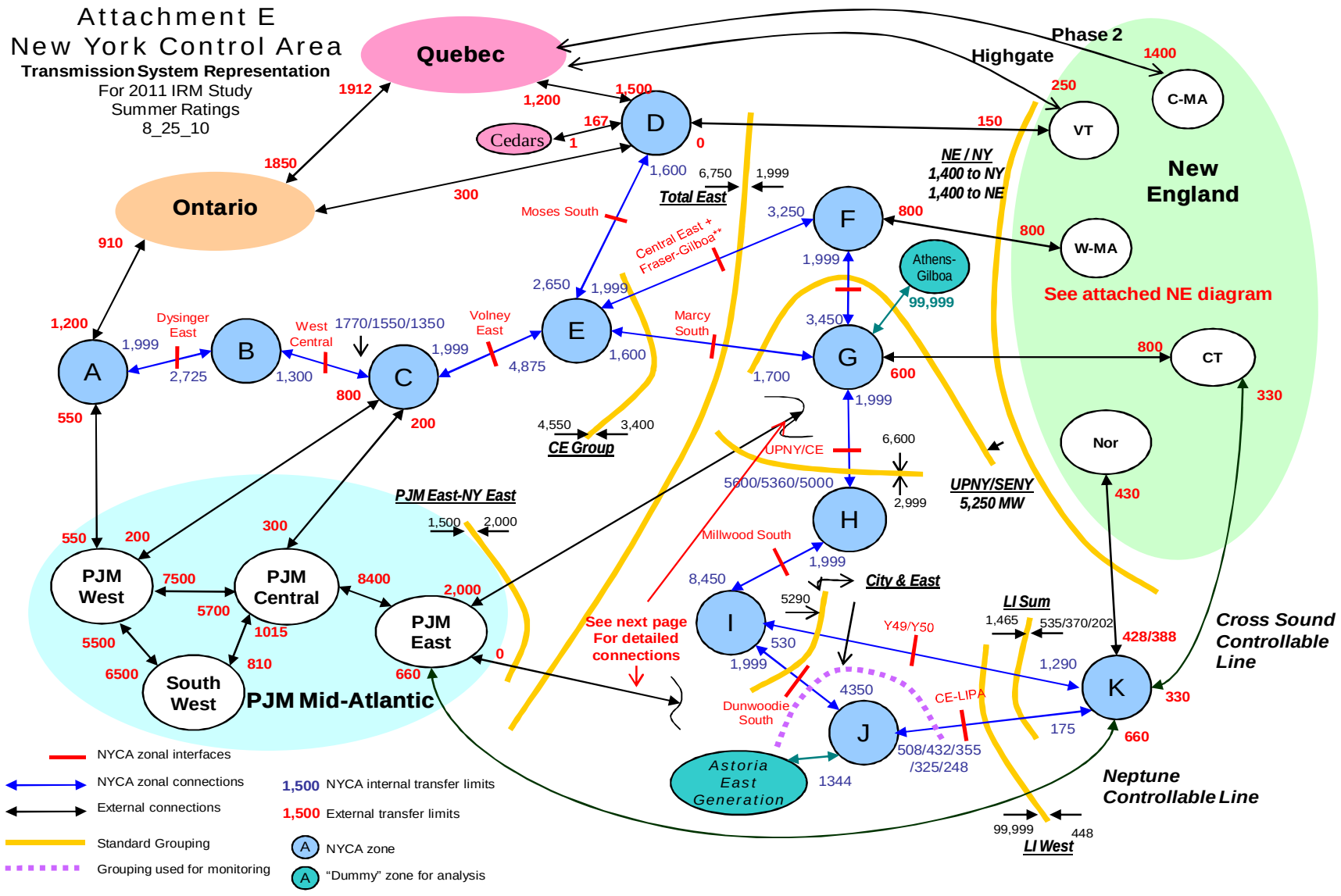


Attachment C-1



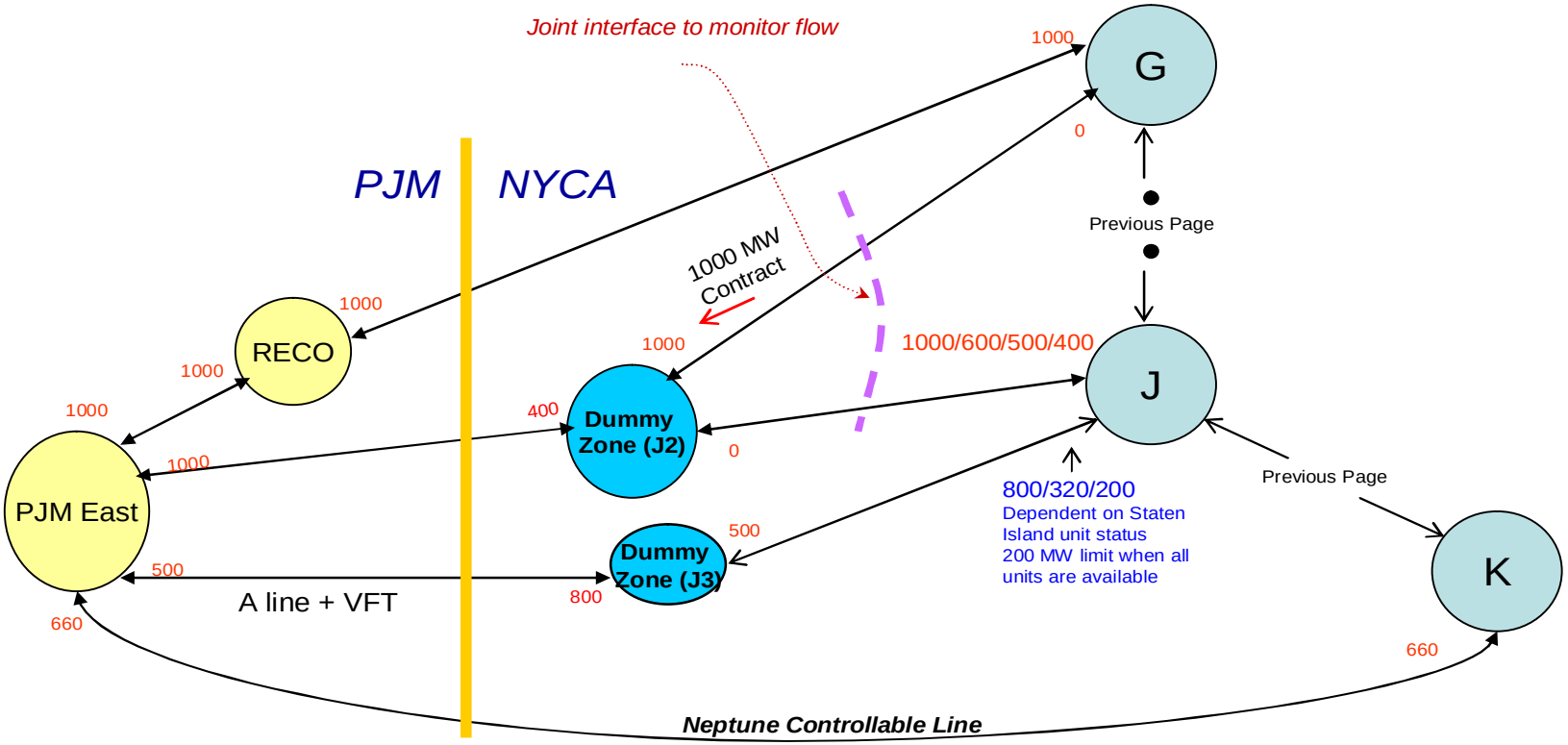
Attachment D
Emergency Operating Procedures

Step	Procedure	Effect	2010 MW Value	2011 MW Value
1	Special Case Resources	Load relief	2575 MW (representing the amount sold)	2498 MW (representing the amount sold)
2	Emergency Demand Response Program	Load relief	329 MW	260 MW
3	5% manual voltage Reduction	Load relief	72 MW	71 MW
4	Thirty-minute reserve to zero	Allow operating reserve to decrease to largest unit capacity (10-minute reserve)	600 MW	600 MW
5	5% remote voltage reduction	Load relief	479 MW	478 MW
6	Voluntary industrial curtailment	Load relief	61 MW	100 MW
7	General public appeals	Load relief	88 MW	88 MW
8	Emergency Purchases	Increase capacity	Varies	Varies
9	Ten-minute reserve to zero	Allow 10-minute reserve to decrease to zero	1200 MW	1200 MW
10	Customer disconnections	Load relief	As needed	As needed


Attachment E
New York Control Area
Transmission System Representation
For 2011 IRM Study
Summer Ratings
8_25_10
Quebec
Ontario
Cedars
Phase 2
Highgate
New England
C-MA
VT
W-MA
See attached NE diagram
NE / NY
1,400 to NY
1,400 to NE
Total East
Moses South
Central East + Fraser-Gilboa**
Athens-Gilboa
99,999
Dysinger East
West Central
1770/1550/1350
Volney East
Marcy South
CE Group
UPNY/CE
UPNY/SENY
5,250 MW
5600/5360/5000
Nor
CT
PJM East-NY East
PJM West
PJM Central
PJM East
South West
PJM Mid-Atlantic
Millwood South
City & East
LI Sum
See next page
For detailed
connections
Y49/Y50
Dunwoodie South
CE-LIPA
Astoria East Generation
Cross Sound Controllable Line
Neptune Controllable Line
LI West
A
B
C
D
E
F
G
H
I
J
K
NYCA zonal interfaces
NYCA zonal connections
External connections
Standard Grouping
Grouping used for monitoring
1,500 NYCA internal transfer limits
1,500 External transfer limits
NYCA zone
"Dummy" zone for analysis

Attachment E-1
New York Control Area
Transmission System Representation
For 2011 IRM Study
Summer Ratings
8_9_10

2010 PJM-SENY MARS Model



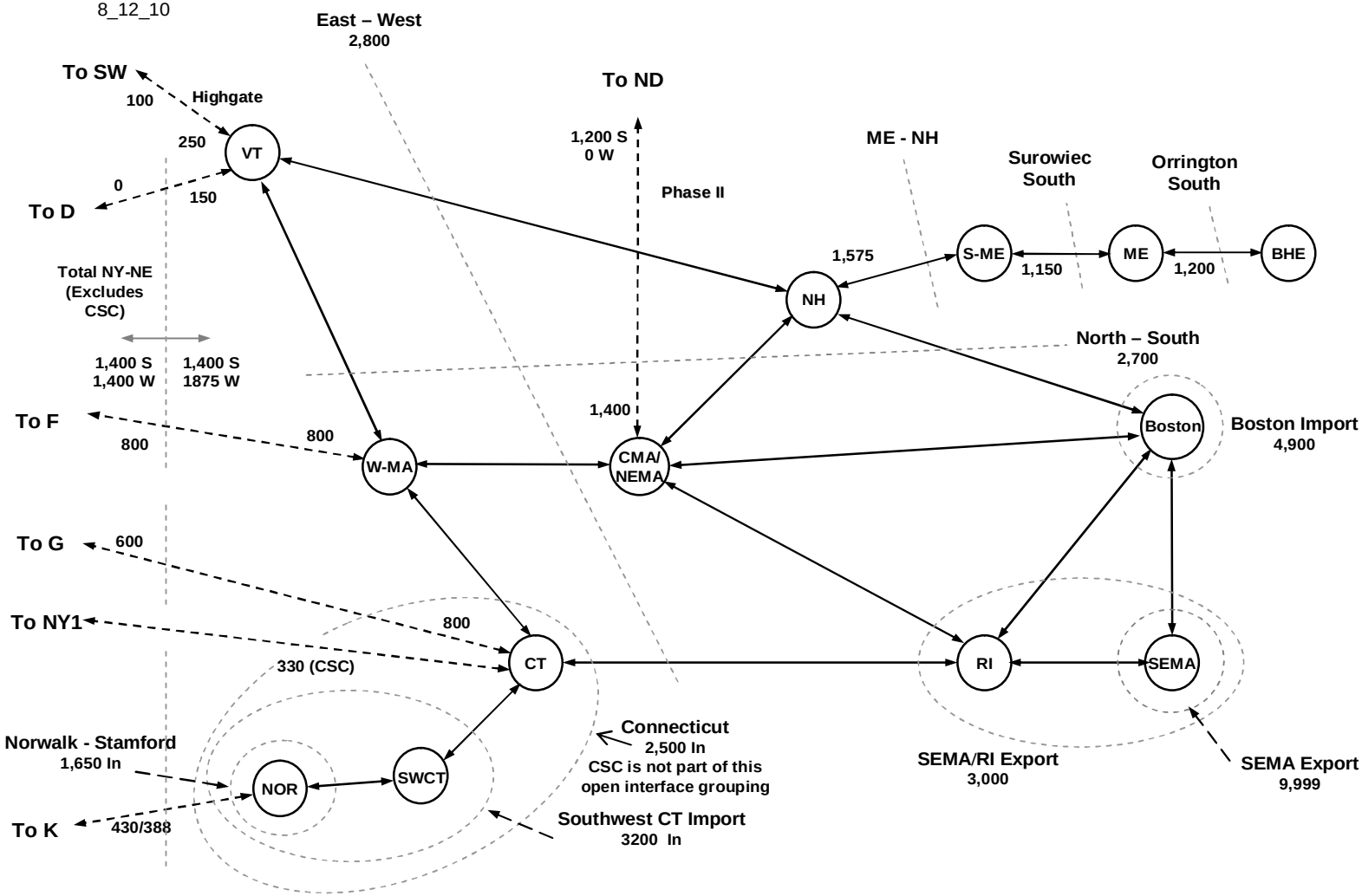
(PJM East to RECO) + (J2 to J) + (PJM East to J3) = 2000

Attachment E-2

Transmission System Representation
For 2011 IRM Study
Summer Ratings
8_12_10

NEPOOL System (Assumed Ratings - MW)

From 2009 New England Review of Resource Adequacy



Attachment F
SCR Determinations

SCR Performance

Zones	August Registrations	Performance Factor	2010 ICAP	2011 ICAP Forecast[1]	Performance Factor	2011 UCAP	Translation Factor[2]	Modeled in 2011 IRM
A-E	1140.0	0.964	1182.7	1320.3	0.964	1272.6	0.80	1018.1
F-I	314.9	0.949	331.7	370.3	0.949	351.5	0.80	281.2
J	478.9	0.876	546.8	610.4	0.876	534.6	0.80	427.7
K	153.5	0.871	176.3	196.8	0.871	171.3	0.80	137.1
Total	2087.25		2237.5	**2497.9**		2330.1		1864.1

1. These values represent a 11.636% growth from August 2010 ICAP based registrations
2. The paper appearing as attachment F-1 in 2010 IRM assumption matrix showed a translation factor range of 72 to 84 percent. As a result of that paper, the ICS adopted a value of 80% for the translation factor. Since no new information has been produced, the figure is still valid.

Attachment G
Review of Operational Data for Run of Rivcr Hydro

Zone	MWs	Derate
A	3.0	
B	14.4	
C	82.4	59.6%
D	48.8	49.9%
E	370.6	40.0%
F	284.0	48.3%
G	47.5	38.2%
I	1.7	
Weighted	Average*	45.7%

*Values for Zones A, B, and I, have been removed from the table for confidentiality reasons, but are included in the total derate calculation.